

REMARKS

Claims 27 and 32 are amended. Claims 13-16 are canceled. Claims 49-52 are added. Claims 1-12, 17-39 and 49-52 are in the application for consideration.

The specification is amended to correct a typographical error. Entry of the same is requested.

The undersigned appreciates the Examiner's indicated allowability in the last action of claims 1-12 and 36-39.

Independent claim 17 stands rejected as being anticipated by EP-131. Applicant disagrees and requests reconsideration. The Examiner is reminded that for a claim to be anticipated, the alleged anticipating reference must disclose each and every limitation of the rejected claim.

Applicant's independent claim 17 is directed to a method of forming a "local interconnect", and includes the limitation of removing trench isolation material from within the isolation trench effective to form a line trench within the trench isolation material into a desired "local interconnect configuration". EP-131 does not disclose this.

EP-131 only discloses that the conductive material formed within its grooves 3 forms bit lines 7. (See col.3, lns.51-53 and all subsequent sections of EP-131). A "bit line" is not a "local interconnect line". A "local interconnect line" is not a "bit line". Local interconnects are understood by people of skill in the art to be a term of art referring to comparatively short conductive lines that

0

interconnect very small portions of integrated circuitry, and do not run or extend globally over large areas of the substrate. Further, bit lines are known by people of skill in the art to run globally over large areas, or subarrays, of the substrate, and are not considered by people of skill in the art to constitute local interconnects. See Applicant's specification, and particularly the last complete paragraph appearing on page 1.

Accordingly, Applicant's independent claim 17, in its preamble and body, refers to a "local interconnect". EP-131 in no way discloses or refers to fabrication associated with local interconnects. Accordingly, the anticipation rejection of claim 17 over EP-131 should be withdrawn, and action to that end is requested.

Independent claims 23 and 32 also stand rejected as being anticipated by EP-131. Yet, both recite and refer to fabrication associated with a local interconnect in the respective bodies and preambles of such claims. Therefore, for the reasons argued above with respect to claim 17, EP-131 does not anticipate independent claims 23 and 32. Accordingly, it is respectfully requested that the anticipation rejections of these claims be withdrawn.

Independent claim 27 stands rejected as being obvious over a combination of EP-131 in view of U.S. Patent No. 4,661,202 to Ochii. Claim 27 has been amended to recite that the depositing of the trench isolation material over the bulk semiconductor substrate is to within the isolation trench effective to overfill the isolation trench. Neither the EP-131 reference nor Ochii discloses such

D

limitation. Specifically, insulative materials 4 and 5 in EP-131 only line the illustrated trench formed within substrate 1, and accordingly do not overfill the isolation trench as recited in claim 27. Likewise with respect to Ochii, its materials 24, 25 and 26 do not overfill the illustrated trenches, and rather only line a portion thereof. Thus, independent claim 27 recites something which is neither shown nor suggested in either of the applied references. Therefore, the combination of references does not meet all of the limitations of Applicant's independent claim 27. Accordingly, the obviousness rejection thereof over EP-131 and Ochii should be withdrawn, and action to that end is requested.

Independent claim 32 stands rejected as being anticipated by Ochii. Applicant disagrees and requests reconsideration.

Claim 32 is not anticipated by Ochi for at least two reasons. First, claim 32 has been amended to recite "overfilling an isolation trench . . . with trench isolation material". As argued above, none of the processing of Ochii depicted or described relative to Figs. 3A-3D overfills its isolation trenches with trench isolation material. Rather, materials 24, 25 and 26 only line the depicted trenches, and do not overfill such trenches. Material 27 in Fig. 3A is stated to be photoresist, and therefore, does not constitute "trench isolation material" in the context of Applicant's claims 32. Accordingly for at least this reason, the rejection of claim 32 over Ochii is seen to be in error, and should be withdrawn. Action to that end is requested.



Second, independent claim 32 has been amended to recite the etching of trench isolation material from within the isolation trench elevationally lower than the outer surface of the semiconductive material effective to form a line trench into a desired local interconnect line configuration within the trench isolation material. Support for the same is inherent in Applicant's application as filed, for example at Fig. 5. Further, Applicant's independent claim 32 recites that the line trench has an insulative base, and that the line trench and insulative base are formed by etching into trench isolation material. Ochiai neither discloses nor suggests these attributes of Applicant's independent claim 32.

Specifically, the undersigned interprets the Examiner to be asserting that the two trenches illustrated in Figs. 3A-3D are "line trenches" in the context of Applicant's claims. However, the only etching of the allegedly equivalent isolation material 26 occurs in the processing going from Figs. 3A to 3B. The Examiner will note that no etching is being conducted of material 26 from within the right illustrated isolation trench elevationally lower than/from the semiconductive material outer surface as it is everywhere there protected by photoresist 27. Accordingly, the etching action of Applicant's independent claim 32 is not met by the etching action in Ochiai with respect to the Figs. 3A, 3B right illustrated trench.

With respect to the Figs. 3A, 3B left illustrated trench, the etching action of material 26 results in the trench having a p-type substrate material base, and thereby does not form a line trench having an insulative base as Applicant

positively recites in independent claim 32. Therefore, the etching action of Applicant's independent claim 32 is not met by the etching action in Ochii with respect to the Figs. 3A, 3B left illustrated trench. Accordingly, independent claim 32 is not anticipated by Ochi and the rejection thereof should be withdrawn. Action to that end is requested.

Applicant's dependent claims should be allowed as depending from allowable base claims, as well as for their own recited features which are neither shown nor suggested in the cited art. Further, and by way of example only, the additionally cited references do not overcome the deficiencies argued above with respect to the other references, nor in combination with any reference suggest the claims as amended herein.


Dependent claims 49-52 are added and are clearly supported by Applicant's application as-filed. For example with respect to claim 52, such recites that the line trench formed in the trench isolation material does not have a width which extends to active area substrate material in any conceivable cross section. Such is clearly contemplated in Applicant's application, for example at as shown in Fig. 6. The limitation is further distinguishing of any alleged teaching from EP-131, as Fig. 4D clearly discloses that its semiconductive substrate active area material 1, 11C is exposed to conductive material 7 within the previously formed grooves 3.

0

For the foregoing reasons, this application is believed to be in immediate condition for allowance, and action to that end is requested

Respectfully submitted,

Dated: SEPTEMBER 17, 2003

By: 
Robert C. Hyta
Reg. No. 46,791

0